

or a house, would remain untouched, while to the east or west everything would be swept clean. In some places an upward and downward curve could be detected in its course; here a mass of trees were leveled to the ground, and there a cluster with only their tops broken off. Reports from Bulloch county show the tornado to have passed over a portion of that county, sweeping nearly everything in its path. At Sandersville, Ga., on the 27th, a tornado passed over the county about 11 a. m., causing much destruction. A number of persons were seriously injured by the blowing down of houses. A school house, at Whidden settlement, was blown down, the teacher and several children were injured. With the exception of the destruction of some fencing and shade trees, Sandersville escaped. At Raynesboro, Ga., 27th, a destructive wind swept over the county, four or five miles northeast of this place. Within the path of this storm a house was blown to pieces, killing one child. No other personal injury is reported, although houses are said to have been destroyed on every plantation within its course. All the public roads are seriously obstructed by fallen trees. Macon, Ga., 27th, a tornado did considerable damage to property near here, and along the railroad as far as Sandersville, dwellings, barns, gin-houses, cabins, and trees were destroyed. No fatal accidents are reported. The tornado was very violent and its track was about a thousand yards wide; it moved from west to east.

### VERIFICATIONS.

#### INDICATIONS.

The detailed comparison of the tri-daily indications for March, 1882, with the telegraphic reports for the succeeding twenty-four hours, shows the general average percentage of verifications to be 86.66 per cent. The percentages for the four elements are: Weather, 81.91; Direction of the Wind, 83.33; Temperature, 90.46; Barometer, 90.86 per cent. By geographical districts they are: For New England, 86.56; Middle Atlantic states, 89.89; South Atlantic states, 86.36; East Gulf states, 83.77; West Gulf states, 81.92; Lower Lake region, 89.06; Upper Lake region, 88.59; Tennessee and the Ohio valley, 91.36; Upper Mississippi valley, 86.43; Lower Missouri valley, 80.48; Northern Pacific coast region, 81.94; Middle Pacific coast region, 93.14; Southern Pacific coast region, 93.14.

There were 88 omissions to predict (31 being due to the absence of reports from the Pacific coast) out of 3,813, or 2.30 per cent. Of the 3,725 predictions that have been made, 143, or 3.84 per cent., are considered to have entirely failed; 148, or 3.98 per cent., were one-fourth verified; 395, or 10.60 per cent., were one-half verified; 207, or 5.56 per cent., were three-fourths verified; 2,832, or 76.02 per cent., were fully justified, so far as can be ascertained by the tri-daily reports.

#### CAUTIONARY SIGNALS.

One hundred and seventy-four Cautionary signals were displayed during the month of March, of which 162, or 93 per cent., were justified by winds of twenty-five miles per hour, at, or within, 100 miles of the station. Sixty-four "Off-shore" signals were displayed, of which 55, or 86 per cent., were fully justified; 58, or 90 per cent., were justified as to direction; and 61, or 95 per cent., were justified as to velocity. Two hundred and thirty-eight signals of all kinds were displayed, of which 217, or 92 per cent., were justified. Twenty-five Cautionary signals were changed to "Off-shore" signals. The above does not include signals ordered at sixty-nine display stations, where the velocity is estimated only. Twenty-nine signals were reported late.

### NAVIGATION.

#### STAGE OF WATER IN RIVERS.

In the table on the right-hand of chart iii., are given the highest and lowest stages of water, as observed at Signal Service

stations, during the month of March. At stations on the Mississippi it will be seen that the water remains above the danger-line at Cairo and Vicksburg, and is only four inches below the danger-line at Memphis. The readings of the highest water during the month at stations on the lower Mississippi, were as follows:

Cairo, fifty-one ft., on the 1st, or eleven feet above the danger-line. Memphis, thirty-six ft., on the 6th, 7th, 9th. Vicksburg, forty-eight ft., nine ins., on 20th, or eight ft., nine ins., above the danger-line. The highest at New Orleans, occurred on the 27th, when it was but five inches below the high-water mark of 1874. The Red river was highest at Shreveport on the 10th, 11th, 12th, when it was thirty-one feet one inch, or one foot above the danger-line; it was lowest on the 31st. The Ohio river rose during the latter part of the month, but did not reach the danger-line; it was highest at Cincinnati on the 25th, at Louisville on the 26th, at Pittsburgh, on the 22d. The Cumberland was highest at Nashville on the 11th and 13th, when it was three feet nine inches above the danger-line. The upper Mississippi rose slowly during the month, between La Crosse and St. Louis, and was highest at Keokuk and Davenport on the 31st.

#### ICE IN RIVERS AND HARBORS.

*Hudson River*: Albany, 1st, ice broke up in river; 3d, river free of ice. First steamer of season left this city for New Baltimore, to-day; 5th, river free of ice from Troy to New York; navigation practically open for this season; 10th, first arrival by river from New York. New York City, 9th, navigation opened; first steamer from Troy arrived to-day.

*Mohawk River*: Albany, 1st, ice broke up in river and passed this city this evening.

*Connecticut River*: Springfield, Mass., 2d, floating ice in river. 3d, river clear of ice.

*Genesee River*: Rochester, 28th, first boat of season arrived to-day.

*Detroit River*: Detroit, 2d, ice along shore in river; 13th, steamer "City of Detroit," left for Cleveland; first departure of season.

*Lake Erie*: Buffalo, 26th, the propeller "New York," arrived from Cleveland; the earliest arrival for many years.

*St. Lawrence River*: Cape Vincent, N. Y., 3d, ice breaking up and going out of river and lake at this place.

*Lake Superior*: Marquette, 3d, ice moved out of harbor; 4th, ice moved back into harbor. Duluth, Minn., 1st, all ice went out into the lake during the night; 4th, ice driven back during the evening; 5th, lake filled with ice; 10th, ice moved out about one-fourth mile; 18th, ice moved out about one-half mile; navigation resumed; tugs with freight and passengers left for northern ports; 20th, ice driven back again, damaging the old breakwater.

*Lake Michigan*: Milwaukee, 8th, navigation practically open. Northport, 31st, no ice to be seen in lake; navigation fairly open.

*Manitowoc River*: Manitowoc, Wis., 4th, ice broke in river; 7th, river frozen; 15th, river open.

*Lake Huron*: Alpena, 2d, ice broken in bay and river; navigation open. Port Huron, 23d, steamer "Flora," left city this a. m. for northern ports; the earliest departure for years.

*Yellowstone River*: Fort Buford, Dak., 29th, ice broke in river at 10 p. m. Fort Keogh, Mont., 28th, river open. Terry's Landing, 25th, river open; 26th, ice gorged in shallow places. Foley, Montana, 28th, ice broke in river during night. Iron Butte, 29th, ice broke in Upper Yellowstone to day, sweeping out about 100 feet of Northern Pacific Dyke.

*Mississippi River*: Burlington, 4th, navigation opened; first boat of season passed city at 5.45 p. m.; 11th, first passenger steamer from St. Louis touched this city on her upward trip to La Crosse. Keokuk, 6th, navigation open; first raft of season passed to-day; 18th, first northward bound steamer passed to-day. La Crosse, 3d, river opened; 4th, navigation resumed; steamer arrived from Fountain City; ferry boats making regu-